

What is claimed is:

508A<sub>2</sub> 1. An olefin isomerization process which comprises  
contacting a fluid feed stream containing an olefin with an  
activated basic metal oxide catalyst under olefin  
5 isomerization conditions, the activated catalyst having an  
initial activity for olefin isomerization and containing an  
amount of activity-affecting impurity which does not exceed  
that amount which will result in a reduction of the initial  
catalyst activity by about 0.075 percent conversion loss per  
10 hour as measured by the isomerization of 1-butene to 2-butene.

2. The olefin isomerization process of claim 1 wherein  
the basic metal oxide catalyst is selected from the group  
consisting of magnesium oxide, calcium oxide, barium oxide,  
15 lithium oxide and combinations thereof.

3. The olefin isomerization process of claim 1 wherein  
the catalyst is magnesium oxide.

20 4. The olefin isomerization process of claim 1 wherein  
the activity-affecting impurity in the basic metal oxide  
catalyst is, or contains, sulfur, phosphorus, at least one  
transition metal or a combination thereof.

5. The olefin isomerization process of claim 4 wherein the at least one transition metal is iron, chromium, cobalt, nickel, or a combination thereof.

5 6. The olefin isomerization process of claim 1 wherein the catalyst contains no more than about 2000 ppm of sulfur and/or phosphorous and no more than about 500 ppm of one or more transition metals.

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10 7. The olefin isomerization process of claim 1 wherein the catalyst contains no more than about 1000 ppm of sulfur and/or phosphorous and no more than about 400 ppm of one or more transition metals.

15 8. The olefin isomerization process of claim 1 wherein the catalyst contains no more than about 75 ppm of sulfur and/or phosphorous and no more than about 330 ppm of one or more transition metals.

20 9. The olefin isomerization process of claim 1 wherein the fluid feed stream comprises an olefin possessing an internal double bond, at least some of the olefin possessing an internal double bond being converted to a corresponding terminal olefin.

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10. The olefin isomerization process of claim 9 wherein the olefin possessing an internal bond comprises 2-hexene and/or 3-hexene and the corresponding terminal olefin is 1-hexene.

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11. The olefin isomerization process of claim 9 wherein the olefin possessing an internal double bond is 2-butene and the corresponding terminal olefin is 1-butene.

12. The olefin isomerization process of claim 10 wherein the conversion of 2-butene to 1-butene is from about 20 percent to about 30 percent.

13. The olefin isomerization process of claim 1 wherein the olefin isomerization conditions include a temperature of at least about 300°C.

14. The olefin isomerization process of claim 1 wherein the olefin isomerization conditions include a temperature of from about 340°C to about 500°C.

15. The olefin isomerization process of claim 1 wherein the basic metal oxide catalyst is selected from the group consisting of magnesium oxide, calcium oxide, barium oxide, lithium oxide and combinations thereof, and the activity-

affecting impurity includes sulfur, phosphorus, at least one transition metal or a combination thereof.

16. The olefin isomerization process of claim 15 wherein the at least one transition metal is iron, chromium, cobalt, nickel, or a combination thereof.

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A 16. The olefin isomerization process of claim 3 wherein the catalyst contains no more than about 2000 ppm of sulfur and/or phosphorous and no more than about 500 ppm of one or more transition metals.

15 18. The olefin isomerization process of claim 3 wherein the catalyst contains no more than about 1000 ppm of sulfur and/or phosphorous and no more than about 400 ppm of one or more transition metals.

20 19. The olefin isomerization process of claim 3 wherein the catalyst contains no more than about 75 ppm of sulfur and/or phosphorous and no more than about 330 ppm of one or more transition metals.

20. A process for isomerizing C<sub>4</sub> olefin derived from a mixed C<sub>4</sub> stream comprising the steps of:

25 a) providing a C<sub>4</sub> stream containing butadiene, 1-butene, 2-butene, and isobutylene;

b) selectively hydrogenating the C<sub>4</sub> stream in the presence of a hydrogenation catalyst and hydrogen whereby the butadiene is selectively hydrogenated;

c) simultaneously hydroisomerizing and fractionating the feed to convert 1-butene to 2-butene and to remove the isobutylene by fractionation; and

d) contacting the C<sub>4</sub> stream with an activated basic metal oxide catalyst under olefin isomerization conditions, the activated catalyst having an initial activity for olefin isomerization and containing an amount of activity-affecting impurity which does not exceed that amount which will result in a reduction of the initial catalyst activity by about 0.075 percent conversion loss per hour.

21. The process of claim 20 wherein the basic metal oxide catalyst contains no more than about 2000 ppm of sulfur and/or phosphorous and no more than about 500 ppm of one or more transition metals.

22. The process of claim 20 wherein the basic metal oxide catalyst contains no more than about 1000 ppm of sulfur and/or phosphorous and no more than about 400 ppm of one or more transition metals.

23. The process of claim 20 wherein the basic metal oxide catalyst contains no more than about 75 ppm of sulfur and/or

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Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100
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